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The Role of the Experimenter in Parapsychological Research

Abstract: *A major challenge facing modern parapsychology continues to be the replicability of psi. Whilst some researchers appear to consistently obtain positive evidence for psi, others, equally consistently, appear to be less successful. Previous research has attempted to explain this so-called 'experimenter effect' in terms of both psychological variables (in terms of how the experimenter treats his or her participants) and parapsychological variables (the experimenter may use his or her own psi to affect the data). In this paper, both of these interpretations are considered, as are other possible interpretations (such as experimenter error and experimenter fraud). Research in this area emphasises the important role of the experimenter in parapsychology. The paper concludes with a discussion of possible implications for the study of consciousness.*

Introduction

Parapsychology has for many years been considered a controversial area of study. Indeed, the majority of researchers and theorists in those fields that would be most likely to inform parapsychological research, such as psychology, philosophy and physics, are typically amongst those most sceptical of parapsychological claims (e.g., McClenon, 1982; McConnell & Clark, 1991; Wagner & Monnet, 1979). However, the study of psi¹ experiences may be regarded as an important aspect of all these endeavours as such experiences have the potential to extend our understanding of how people interact with their environment. Most notably, the study of such experiences from a psychological perspective is likely to be most fruitful. This is because psychological understanding will be extended whether or not such experiences can be shown to have a paranormal basis. Philosophers and physicists are likely to be most interested if such experiences do turn out to reflect a hitherto unexplained form of human–environment interaction.

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- [1] The term 'psi' is used in this paper to refer to apparently anomalous processes of information transfer, and so subsumes terms such as extra-sensory perception (ESP) and psychokinesis (PK).

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One of the reasons that controversy continues to surround parapsychological research is that experimental studies of psi phenomena are still unable to produce the level of replicability that would satisfy critics of parapsychology. If parapsychologists were able to demonstrate a psi effect as easily as psychologists might demonstrate a Stroop effect, then the scientific community at large would probably take a little more notice. However, the 'experimenter effect' in parapsychology is one obstacle that has hindered replication attempts of psi effects, thus preventing widespread acceptance of the field within mainstream science.

For many years, psi proponents and their critics have noticed that some experimenters tend to be consistently more successful than others at obtaining evidence in favour of psi (e.g., MacFarland, 1938; Nicol & Humphrey, 1953; Pratt & Price, 1938; West & Fisk, 1953; Wiseman & Schlitz, 1997; 1999). This observation, labelled the 'experimenter effect', has led researchers to consider why this might be the case. Why do some investigators seem to be consistently unable to obtain evidence for psi, whilst others continue to obtain psi effects in their experiments? What is it about these apparently 'successful' experimenters that distinguish them from 'unsuccessful' experimenters? As these questions lie at the heart of the issue of replication in parapsychology, the experimenter effect has been described as 'the most important challenge facing modern experimental parapsychology' (Palmer, 1986, p. 220).

It comes as little surprise to learn that 'successful' psi experimenters tend to have more positive attitudes towards psi phenomena than 'unsuccessful' experimenters. For example, successful experimenters tend to be more likely to think that psi exists, that they have some psi ability, and that it is possible to demonstrate psi in an experimental study (Smith, in press). This relationship between attitudes towards psi phenomena and success as an experimenter may be explained in two ways. First, obtaining positive findings in one's psi experiments is likely to have a positive impact upon one's own attitudes towards psi. Likewise, an experimenter who consistently does not obtain evidence for psi is likely to become less convinced of the reality of psi. Second, and more importantly for the present discussion, it may be that more positive attitudes to psi result in being more successful in obtaining evidence in favour of psi. If this is the case, then a number of mechanisms present themselves as possible mediators of this relationship, and as possible explanations for the 'experimenter effect'.

If experimenters with more positive attitudes towards psi make more successful experimenters, this might, for example, be explained in terms of experimenter error. That is, such experimenters may be more motivated to produce results that are consistent with their prior beliefs about psi (e.g., that psi exists, and can be demonstrated in an experimental study) and so make biased, though not deliberate, errors in the design, running, analysis or reporting of their experiments. It is also possible that these motivated errors are deliberately intended by experimenters wishing to 'validate' their own beliefs about psi. Critics of parapsychology tend to favour these interpretations of the experimenter effect in psi research.

Psi proponents, however, tend to point to other possible explanations of the experimenter effect. For example, one might explain the relationship between

attitudes towards psi and success as an experimenter in terms of experimenter–participant interactions. According to this interpretation, the experimenter communicates his or her attitudes towards psi to the participants so affecting participants’ motivation, beliefs or expectations of success, which in turn affect the participants’ performance on the psi task. Another interpretation highlights the possible role of the experimenter as a source of psi. That is, it is possible that (if one is willing to entertain the psi hypothesis) successful experimenters use their own psi ability, either consciously or unconsciously, to influence the outcome of their experiments.

In this paper, all of the above four interpretations of the experimenter effect in parapsychology (experimenter error; experimenter fraud; experimenter–participant interaction; experimenter psi) will be considered before focusing on the potential implications of the experimenter effect for research on consciousness.

The Experimenter Effect as Experimenter Error

As noted above, one possible interpretation of the experimenter effect in parapsychology is that apparently ‘successful’ experimenters make motivated (although unconscious) errors somewhere during the experimental process. According to this interpretation, these errors (whether they be at the design stage, the data collection stage or the analysis stage) are motivated by the experimenter’s wish to obtain evidence in support of psi. Critics who have adopted this approach have typically done so on *a priori* grounds, arguing that it is more reasonable to believe that significant experimental results are best explained in terms of experimental error than to believe psi exists. However, the general argument is supported by a large body of literature that suggests that researchers in a wide range of scientific disciplines are susceptible to making systematic errors in support of the hypothesis they are testing (for a review, see Rosenthal, 1976).

Parapsychologists have also long been aware of such potential biasing factors. In an apparent test of extrasensory perception (ESP), Kennedy and Uphoff (1939) had participants attempt to psychically ‘send’ symbols on ESP cards (either a circle, cross, wavy lines, square or star) to the experimenter. Participants were also required to record the experimenter’s guess for each trial. As the experimenter’s guesses had been predetermined, it was possible to calculate the number of recording errors made by participants. It was found that just over 1% of the guesses were mis-recorded. More importantly, it was found that participants who had positive attitudes towards psi were more likely to make errors that artificially inflated the psi scores, whilst participants who had negative attitudes towards psi tended to make errors that deflated psi scores. A conceptually similar experiment using a psychokinesis (PK) task, in which participants attempted to both influence the fall of dice and record their scores, showed a comparable pattern of findings (Sheffield *et al.*, 1952).

Whilst these studies reveal the extent to which an individual’s attitudes towards psi may influence the types of recording errors in a psi experiment, it is unclear how much this tells us about the possible role of experimenter error in the

experimenter effect in modern parapsychology. It seems possible that these kinds of motivated errors may have contributed to some of the findings of early experimental research. However, parapsychological research has for many years been characterized by the increasingly widespread use of automated methods for collecting, tabulating and analysing data. In addition, double-blind procedures often mean that persons responsible for collating data do not know the full meaning of the scores with which they are dealing. This is not to say that potential routes for experimenter bias do not still exist in more contemporary research studies. It is possible that experimenters who are favourable to the psi hypothesis tend to be more prone to designing studies that do not pay sufficient attention to ruling out non-psi methods of information transfer (e.g., sensory cueing) than are experimenters who are less favourable to psi. Similarly, although analytic procedures are now typically performed using standard computer-based statistical software packages and formal analyses of data should be pre-planned, it may still be up to the investigator to make a variety of decisions about exactly how to prepare the data for analysis (e.g., which outcome measure to use, excluding data, transferring data from one format to another, etc.). Future research would do well to empirically assess these possibilities.

The Experimenter Effect as Experimenter Fraud

Taking the arguments outlined above a stage further, a critic of parapsychology might even suggest that some of these kinds of experimental 'error' are, in fact, deliberate attempts by the experimenter to obtain findings that are in accord with his or her *a priori* beliefs about psi. Thus, according to this argument, researchers who appear to consistently obtain significant findings in support of psi may simply be engaging in fraud.

It has been suggested that scientific fraud may be more widespread than we often acknowledge. Broad and Wade (1982) discuss a number of cases of fraud in various scientific disciplines ranging from astronomy and physics to biology and medicine. They argue that the potential motives to engage in scientific fraud are high, with recognition going to the first to make a groundbreaking discovery (not to mention the possibility of lucrative research contracts). It is therefore not surprising, they argue, that deceit and dishonesty are no less common in science than they are in other endeavours. Within this context, documented instances of experimenter fraud appear to be no more common in parapsychology than in other disciplines. However, the few allegations of fraud in parapsychology have received widespread attention from its critics. There are two cases that have received the most attention both within and beyond parapsychology. The first of these relates to the work of S.G. Soal. Soal initially attempted, unsuccessfully, to replicate the card-guessing experiments conducted by J.B. Rhine and his team at Duke University. However, on re-examining his data he found two participants who showed highly significant between-trial displacement effects. This meant that, rather than scoring hits on the target intended for each trial, their calls showed significant hitting on either the target intended for the previous trial

(−1 displacement) or the subsequent trial (+1 displacement). (Note that trial-by-trial feedback was not given.) One of these participants was a photographer called Basil Shackleton. Soal decided to conduct a series of tests with Shackleton in order to confirm these effects and continued to find highly significant displacement effects, reporting odds against chance that were astronomically high (Soal & Goldney, 1943).

The first criticism of these experiments received much attention as they appeared in a leading scientific journal, *Science* (Price, 1955). Price speculated that if Soal had colluded with at least one of the other people involved in the experiments it would have been relatively easy for the data to be faked. Further criticism elaborated on these possible fraud scenarios (Hansel, 1960; 1966). Later criticisms, however, focused on allegations (initially made by one of the individuals involved in the experiments) that Soal had been seen altering the record sheets, and subsequent analyses provided empirical support for these claims (Markwick, 1978; Medhurst, 1971; Scott *et al.*, 1974). Consequently, Soal's data became disregarded as evidence for psi and his name a byword for fraud in parapsychology.

The second case is that of Walter J. Levy, whom J.B. Rhine hoped would take over as the director of the Institute for Parapsychology (the successor to the Duke University Parapsychology Laboratory) when Rhine retired. Levy had developed a procedure for demonstrating apparent PK effects in rodents. In his experiments, the rodents could seemingly influence an electric generator to activate electrodes that would stimulate their brains. After consistently obtaining positive findings with this procedure, results eventually returned to within chance expectation. Around this time, Levy's colleagues at the Institute became suspicious of the increased attention he seemed to be paying to the experimental equipment, and so secretly observed him during a testing session. They caught him tampering with the equipment so that it would produce what would appear to be positive results. The researchers-turned-sleuths reported what they had seen to Rhine. Although Rhine was clearly surprised by these revelations about his protégé, he responded quickly by going public with the case (Rhine, 1974b). An added irony with this case was that it occurred only a matter of months after Rhine had publicly commented on the rarity of cases of experimenter fraud in parapsychology at that time (Rhine, 1974a).

Of course, these are the only two cases of fraud in parapsychology that have been well documented. It is extremely difficult, if not impossible, to estimate the extent to which fraud takes place but goes undetected in parapsychological research. However, there is no data to suggest that fraud in parapsychology is any higher than in other scientific disciplines. Those critics who may take this view must do so on *a priori* grounds, which perhaps tells us more about the worldview of such critics than the state of the evidence in parapsychology. In short, it seems that experimenter fraud cannot, on its own, explain the experimenter effect in parapsychology.

The Experimenter Effect as Experimenter–Participant Interaction

Parapsychologists generally take a very different view regarding how the experimenter effect might be interpreted. It has long been suggested that certain types of experimenter and, in particular, certain types of experimenter–participant interactions are more conducive to the elicitation of psi effects. For example, in their review of the state of the field in the 1950s, Rhine and Pratt (1957) argued that the experimenter must be able to provide ‘the psychological conditions under which psi can operate’ (Rhine & Pratt, 1957, p. 131). Others have even suggested that the relationship between the experimenter and his or her participants may well be the most important factor in determining the success of a psi experiment (e.g., White, 1976).

This argument implies that not only does psi exist but that the likelihood of observing psi phenomena in a laboratory setting is largely dependent upon who is conducting the study. More specifically, it suggests that the chances of obtaining evidence in favour of psi are greater if the experimenter who comes into contact with the participants is skilled in creating the appropriate psychological conditions. So what might these conditions be?

One condition that became apparent from some of the early experimental research was that successful experimenters were typically highly motivated to obtain support for the psi hypothesis and were, perhaps, able to convey this motivation to their participants (Murphy, 1949; Rhine, 1948). Although this observation was not directly tested, Rhine suggested that difficulties in replicating psi effects might be explicable in terms of a drop in researchers’ motivation. The difficulties in recapturing this same level of motivation once that researcher had obtained initial support was proposed to be partly responsible for subsequent declines in scoring and the inability to replicate earlier findings (Rhine, 1948).

As noted earlier, there is also evidence that the most ‘successful’ psi experimenters are generally more likely to believe that psi is possible than do less successful experimenters (Smith, *in press*). Perhaps these attitudes towards psi are communicated to research participants, which influences the participants’ levels of motivation or expectations of success on the experimental task. There is some evidence that an experimenter’s attitudes towards psi and expectations of success in a psi experiment do influence participants’ performance on a psi task.

Two recent studies on the experimenter’s role in studies of ‘remote staring’ experiments perhaps illustrate this best (Wiseman & Schlitz, 1997; 1999). In these studies, designed to test the apparent role of psi in people’s ability to sense when they are being watched, participants’ galvanic skin response (GSR) is measured whilst the experimenter observes from a separate room linked by closed-circuit television. At randomly determined periods (to which the participant is blind) the experimenter either stares at the participant’s image on the CCTV monitor, or looks away so that the image cannot be seen. In earlier research conducted by Schlitz (e.g., Schlitz & Laberge, 1997), it had been found that participants’ GSR was significantly different during the ‘stare’ periods compared to the ‘no-stare’ periods. In Wiseman’s research (Wiseman & Smith, 1994;

Wiseman *et al.*, 1995), however, no evidence for a remote-staring effect had been found. An important difference between these two researchers, which may go some way to explaining these contrasting findings, was their *a priori* beliefs about psi phenomena and their expectations about the likely success of their experimental trials. Wiseman is described as a 'sceptic regarding the claims of parapsychology' whilst Schlitz is described as a 'psi proponent' (Wiseman & Schlitz, 1997, p. 198). These researchers, therefore, collaborated to conduct a remote-staring experiment in which Wiseman acted as experimenter on half the trials whilst Schlitz acted as experimenter on the remaining trials. As hypothesised, they found a significant effect in the data from the trials conducted by Schlitz, with participants being more activated during the 'stare' periods than in the 'no-stare' periods, but not in Wiseman's data (Wiseman & Schlitz, 1997). A similar result was found in a replication attempt, although in this study Schlitz's data showed that participants were significantly calmer during the 'stare' periods than in the 'no-stare' periods (Wiseman & Schlitz, 1999).

One possible explanation for Wiseman and Schlitz's findings is that the experimenters' attitudes towards psi are communicated to their participants during the briefing stage of the experiment. Thus, experimenter's overtly expressed attitudes towards psi may influence participants' motivation or expectations of success in the experiment, which in turn impacts upon participants' psi scores. Note that when participants were asked to record their personal attitudes towards psi, after the briefing period, Schlitz's participants reported a stronger belief in psi compared to Wiseman's participants, although this difference did not reach significance. Also, recently published interviews with Wiseman and Schlitz revealed how Schlitz clearly put more effort into creating a rapport with participants than did Wiseman (Watt *et al.*, 2002).

Other research has measured the effect of directly manipulating experimenters' expectations of success upon participants' psi scores. Parker (1975, pp. 42–4) gave student experimenters either a positive or negative expectancy about the outcome of a psi experiment. Experimenters were given a brief lecture about extrasensory perception (ESP) research, and were either informed that previous research using the experimental procedure they were about to use had demonstrated the reality of ESP (for those experimenters in the positive expectancy group) or were told there was no reliable evidence to support the existence of ESP (for those experimenters in the negative expectancy group). In addition, experimenters in the positive expectancy condition were led to expect that participants would score between seven and ten hits per run, whilst the experimenters given the negative expectancy were to expect scores close to the mean chance expectation of five hits per run. As predicted, the total scores of participants when tested by experimenters with the positive expectancy were significantly higher than when they were tested by experimenters with the negative expectancy. In a similar study, Taddonio (1976) told student experimenters that the ESP test they were to use was a recently developed technique developed by Taddonio's colleagues and that the students were being asked to conduct a replication of their findings. Taddonio manipulated the expectancy of experimenters

by telling those in one group that participants in previous studies using this new technique had consistently obtained above chance scores. These experimenters were assured that the test could not fail and that the results of the student's replication would give the same high scores. Experimenters in the second group were told that Taddonio's colleagues who had developed the test were worried about it because participants were all scoring well below chance. They were led to believe that the test seemed to elicit psi-missing rather than psi-hitting and that there was no doubt that the student's replication would show the same level of low scoring. In both a pilot study and a confirmatory study, participants tested by the experimenters given the positive expectancy about the test scored significantly higher than participants tested by the experimenters given the negative expectancy. Taddonio suggested that these differences in scoring 'probably reflect differences in the psychological impact of the two experimenter groups upon their subjects' (p. 113). If this is the case, it is likely that such 'cueing' was conveyed through non-verbal behaviour and paralinguistic cues (such as tone of voice) given that all experimenters read from identical instructions sheets.

Some research has begun to explore more explicitly how the experimenter-participant interaction in parapsychology experiments might impact upon the outcome of such experiments. For example, in some of the earliest research on the experimenter effect in parapsychology, Pratt and Price (1938) attempted to manipulate the way in which participants were handled when they took part in an ESP experiment. Price, who had consistently obtained significant results in earlier research, acted as the experimenter who interacted with the participants, whilst Pratt attended to the experimental controls. Price attempted to treat half her participants 'unfavourably', by not engaging in conversation with them, while she treated the other half 'favourably', by engaging in conversation both before and during the experiment. Participants were tested in pairs, with one member of each pair being treated favourably and the other being treated unfavourably. This experiment did not reveal any difference in ESP performance between the two groups. However, one problem with this study was that Price complained of the difficulty of trying to artificially induce the favourable and unfavourable conditions and that these constraints made it difficult to establish properly favourable conditions for any of the participants. When Price was allowed to test participants without such restrictions, by simply aiming to obtain the best scores possible, significant results returned. In their review of their findings they noted that Price's natural method of handling her participants encouraged 'a free social atmosphere in which general conversation flourishes' (p. 92). It is possible that even in the 'favourable' conditions Price attempted to engender in the first part of their study, such a 'free and social atmosphere' was not present given the restrictions of being required to present herself unfavourably to the second participant.

A clearer set of findings was found in a study in which experimenters were instructed to interact with their participants either in a 'casual', 'friendly' and 'supportive' manner or in a 'formal', 'unfriendly' and 'abrupt' manner. As anticipated, participants in the 'friendly' condition scored significantly above chance on a subsequent ESP task, whilst participants in the 'unfriendly' condition

scored significantly below chance on this task (Honorton *et al.*, 1975). More recent attempts to manipulate the nature of the experimenter–participant interaction have yielded mixed results. In one study, participants were either tested in a ‘personal’ condition in which experimenters attempted to create a ‘friendly, welcoming and lively’ atmosphere or were tested in a ‘neutral’ condition in which they were simply presented with experimental instructions on a computer screen in order to keep experimenter–participant interaction to a minimum. No overall significant psi effect was found, nor were there any significant differences between the two conditions (Schneider *et al.*, 2000). In another study, the experimenter gave either ‘supportive’ or ‘unsupportive’ suggestions to participants. Although psi scores (on a remote attention-focusing task) did not differ between these two conditions, participants in the ‘supportive’ condition perceived the experimenter as warmer and more professional than participants tested in the ‘unsupportive’ condition (Watt & Baker, 2002).

A different approach was taken by researchers wishing to examine possible differences between those researchers who consistently obtained evidence in favour of psi (termed ‘psi-conducive’ experimenters) and those researchers who consistently did not obtain evidence for psi (termed ‘psi-inhibitory’). Potential participants’ perceptions of the warmth of ‘psi-conducive’ and ‘psi-inhibitory’ experimenters were investigated in a study in which students were asked to rate a number of parapsychologists against a list of descriptive adjectives after watching video-recorded conference presentations by each one (Schmeidler & Maher, 1981). Twenty-seven researchers were video-recorded giving presentations at the Annual Convention of the Parapsychological Association. Five ‘psi-conducive’ and five ‘psi-inhibitory’ researchers were selected who were matched in terms of age, sex, overt physical characteristics and whether they grew up in the USA. Students were shown the tapes in random order and asked to make judgements about each researcher’s behaviour using a checklist of 30 descriptive adjectives. Responses to 14 of the 30 adjectives showed significant differences for the two types of investigator. Supposedly ‘psi-conducive’ experimenters tended to be rated as more flexible, friendly, free, likeable, warm, enthusiastic and playful whilst ‘psi-inhibitory’ experimenters were rated as more rigid, cold, overconfident, tense, irritable, egoistic and unfriendly. An attempted replication found ‘psi-conducive’ experimenters to be perceived as more active, nervous and enthusiastic with ‘psi-inhibitory’ experimenters being perceived as more poised, egoistic, cold and confident (Edge & Farkash, 1992, pp. 171–2). Thus, although in both studies there was a good deal of variance between judge’s ratings, there would appear to be some agreement among potential participants that ‘successful’ psi experimenters come across as more enthusiastic, warmer and less egoistic than do their less successful counterparts. These findings were echoed in the comments of Bem and Honorton (1994) when they claimed that psi experiments conducted in a ‘warm and sociable’ atmosphere are more likely to be successful than those conducted in a formal atmosphere.

Thus, as we have seen, some parapsychological research has attempted to assess the extent to which certain types of experimenter–participant interaction

may influence participants' performance on a psi task and has identified some possible determinants of successful experimental interactions (such as positive attitudes towards psi and an expectation of success in the experiment). However, parapsychologists have been slow to examine the details of the experimenter-participant interaction to find out exactly the ways in which experimenter's attitudes and expectancies might be communicated to participants.

Fortunately, social psychological research has accumulated considerable evidence of how experimenter's expectancy regarding the outcome of his or her experiment can be communicated through such subtle visual cues as how often the experimenter smiles and glances at the participant, and the length of time the experimenter devotes to different parts of the experiment (e.g., Friedman, 1967; Page, 1970; Rosenthal, 1976). Auditory cues such as the experimenter's tone of voice have also been shown to communicate experimenter expectancies in studies in which experimenters given different expectancies recorded instructions on to audio-tape (e.g., Adair & Epstein, 1967; Troffer & Tart, 1964). Several models have been put forward to explain exactly how these unintentional cues influence participants' responses (Rosenthal, 1969). For example, it has been suggested that these cues may serve to act as reinforcers when participants give responses on the psychological task which are consistent with the experimenter's hypothesis. However, Rosenthal has argued that if this were the case, then one would expect to find that the first of a series of responses given by a particular participant would not be affected by the experimenter's expectancy, and later responses would generally show more bias than earlier responses. Evidence from four experiments presented by Rosenthal (1976) does not support this notion. Instead, it was found that expectancy effects were in fact most notable for participants' first response than for later responses. Such data suggest that experimenter expectancy is more likely to be communicated during the initial 'meeting-and-greeting' stage of data collection. There is also evidence, although far from conclusive, to suggest that experimenters can learn to become more effective at unintentionally biasing participants in the direction of their hypothesis. That is, some studies have shown that expectancy effects are greater for participants tested later in an experimental series than for those tested earlier in the series (Rosenthal, 1969).

In short, research into experimenter effects in psychological experiments has revealed a number of interesting patterns that go some way to explaining how an experimenter's expectancy may be communicated to his or her participants. However, much of this research, conducted some years ago, focused on how experimenter effects are mediated in research on verbal learning tasks and person-perception tasks. It is yet to be confirmed whether experimenter expectancy effects in parapsychological research are communicated in the same way, although the research linking experimenter 'warmth' with performance on psi tasks may be regarded as a useful starting point for such research.

The Experimenter Effect as Experimenter Psi

The final interpretation of the experimenter effect in parapsychology to be considered here relates to the possible sources of psi in parapsychology experiments. If psi is real, then it is plausible, indeed likely, that the experimental participants are not the only source of psi in a successful parapsychology experiment. The experimenter may also exert a psi influence over the data. Given that apparently 'psi-conducive' experimenters typically tend to believe that psi exists, and are highly motivated to obtain findings in support of psi (often more so than their research participants) then one might argue that the experimenters are potentially a more significant source of psi than the participants.

Kennedy and Taddonio (1976) were among the first to elucidate the possible role of experimenter psi in parapsychology experiments.² Whilst acknowledging the likely importance of the experimenter–participant interaction in such experiments, Kennedy and Taddonio suggested that this was only part of the story. They introduced the term 'psi experimenter effect' to refer to 'unintentional psi which affects an experimental outcome in ways that are directly related to the experimenter's needs, wishes, expectancies, moods, etc.' (p. 5). They point to a wide range of studies that appear to suggest that psi experimenter effects are both possible and likely. For example, they note that procedures used in laboratory psychokinesis (PK) studies cannot rule out the influence of individuals other than the supposed 'subject' upon the target (including the experimenter). They cite several studies showing apparent statistical effects demonstrating psychokinesis even when PK targets are kept blind (e.g., Osis, 1953; Thouless, 1949–1952), suggesting that keeping the experimenter blind to the targets does not rule out possible psi influence by the experimenter. In a similar vein, they point to studies demonstrating apparent non-intentional PK effects (e.g., Schmidt, 1975; Stanford *et al.*, 1975). These studies show that apparent PK effects may occur even when they are not being intentionally strived for. As it is assumed that experimenters do not necessarily intentionally strive to influence the outcomes of experiments, such studies provide support for the possibility of psi experimenter effects, as they suggest that intentional striving for a certain outcome is not required for a PK effect to occur.

A particularly interesting study in this context was that conducted by Stanford (1970). Participants were asked to listen to a dream report before being given a multiple-choice questionnaire to ostensibly assess their memory of the report. Although they were not aware of it, participants were actually taking part in an unusual ESP test. The multiple-choice test consisted of three types of question. A third of the questions had one correct answer, a third had two possible answers, and a third had no correct answer. This was because Stanford wanted to find out whether participants' performance on this 'memory' test could somehow be influenced through psi in accordance with the experimenter's aims. For each item on the test, one of the alternative responses was randomly designated as the

[2] Around the same time, White (1976) also discussed the possibility of experimenter's psi influencing the outcomes of parapsychological experiments.

target. Thus, in some cases the 'target' answer agreed with the story from the dream report, whilst in others it did not. This meant that it was possible to examine the extent to which participants might have been 'pushed' by psi to choose a target response that was counter to the dream report. The number of counter-report responses when the target response agreed with the report was just one out of 51 responses (2%). The number of counter-report responses when the target response did not agree with the correct response was 31 out of 189 responses (16%). One interpretation of this significant difference is that, even on an ostensibly non-psi task (in this case a memory test), psi may disrupt performance in accordance with the experimenter's aims. Kennedy and Taddonio (1976) took such findings to indicate that psi experimenter effects may even be strong enough to influence performance on well-structured psychological tasks.

Studies in which participants show differential psi performance for different experimenters, even though there is no experimenter-participant contact, also point to the experimenter as a potential source of psi. One of the seminal studies examining this issue was conducted by West and Fisk (1953). In this study, Fisk sent 32 sealed packets of 'clock card' targets through the post to each of twenty participants. The sequence of these targets had been generated using a table of random numbers. Without opening the packets, participants were required to make their responses by guessing the 'time' shown on each card. They did this for each trial by drawing a clock hand on a clock face pointing to one of the twelve hours. Once they had completed the task, they returned the unopened packets and their response sheets to Fisk. An important part of the design, however, was kept hidden from the participants. Fisk, who had consistently obtained significant results in previous parapsychology experiments, generated targets for, and checked, only half the data. The other half were generated and checked by West, who had a history of being generally unsuccessful in obtaining significant psi data. Whilst the overall data gave significant results, with participants making correct guesses more than would be predicted by chance, this significance rested solely on Fisk's data. West's data were at chance. Similar results were found in an experiment that extended this idea by examining the possible psi influence of the person who checks the data (Weiner & Zingrone, 1986).

Studies such as these, themselves in need of replication, do suggest that replication difficulties in parapsychology may be due, at least in part, to psi-related experimenter influences. One set of questions raised by these data relates to likely variables that moderate psi experimenter effects. As with studies examining how the experimenter-participant interaction can impact upon psi scores, an experimenter's attitude towards psi is likely to be important. For example, in one recent study reminiscent of those conducted by Parker (1975) and Taddonio (1976), fourteen students were trained to act as experimenters in a remote attention-focusing task. Nine of these student experimenters were classified as 'psi-believers' and five were classified as 'psi-disbelievers' on the basis of their responses on a 12-item belief in psi questionnaire. Over 36 trials, in which each experimenter conducted at least two trials, not only was an overall significant deviation from chance observed but, more importantly, this significance was

entirely due to the data obtained by the psi-believer experimenters (Watt, 2002). Whilst this effect may be explained in terms of different experimenter–participant interactions in the two conditions, additional data reported by Watt do not lend support to this interpretation. Participants were asked to rate their experimenter in terms of ‘warmth’, ‘professionalism’, and their ability to ‘instil confidence’. Those tested by the psi-believers did not rate their experimenters any more positively than those tested by the psi-disbelievers. This suggests that the apparent difference in psi performance was not due to psi-believers treating their participants in a manner that was noticeably different from the psi-disbelievers.

It has been suggested that an experimenter’s motivation for obtaining evidence in support of psi is likely to be the over-riding moderator variable. Such motivation may be based upon a desire to have one’s *a priori* beliefs in psi confirmed, or it may be how one’s underlying expectations of success in the experiment manifest themselves. Either way, studies examining the putative role of experimenter psi in parapsychology (and psychology) experiments seem to suggest that an experimenter may have a direct, psi-based influence over the outcome of his or her studies in addition to any effect that may be mediated by how he or she interacts with participants.

Implications of the Experimenter Effect for the Study of Consciousness

It seems to me that the most wide-reaching implications of the research discussed in this paper for research on consciousness arise if, and only if, psi represents a genuine communication anomaly. If the experimenter effect in parapsychology can be satisfactorily explained by either experimenter error or experimenter fraud (or a combination of the two), then I see no reason why consciousness researchers should show any real interest, other than as a remarkable case study of unconscious and conscious self-deception. However, although more research is needed on the potential role of experimenter bias in contemporary parapsychological research, the experimenter error and fraud interpretations of the experimenter effect do not, in my view, appear to explain the existing data sufficiently.

The latter two sections of this paper suggest that the experimenter effect in parapsychology is likely to be of interest to researchers and theorists seeking to explore and explain the nature of consciousness. The research reviewed in these sections shows how an experimenter may unintentionally affect the data he or she is collecting. The research on the nature of the experimenter–participant interaction suggests that an experimenter’s wishes, intentions and expectations may be communicated in ways that are familiar to social psychologists. The research on non-intentional psi suggests that these may even have a more direct impact upon the data, through experimenter psi. It should be noted that these two ostensible ways in which an experimenter’s desires and expectations seem to impact upon data in psi experiments are not mutually exclusive, and they may well be mediated by both social psychological factors and psi-based factors.

From a methodological perspective, whatever the purported mechanism(s) of this effect of the experimenter upon the data, it does raise potential problems for sceptical researchers who wish to attempt to replicate psi experiments. This is because it suggests that such researchers, especially if they act as the experimenter who comes into contact with research participants, are less likely to obtain positive findings even if the psi effect is real. Rather than view this implication as a 'get-out clause' for pre-empting unsuccessful replication attempts, sceptical researchers should accommodate this possibility by, say, recruiting experimenters who have favourable attitudes towards psi, positive expectations of success, and are able to build a rapport with participants.

The suggestion that the outcomes of parapsychology experiments may be related, at least in part, to some kind of psi influence on behalf of the experimenter is probably the concept that many readers will find most uncomfortable.

For example, one might argue that the possibility of experimenter psi, and its impact upon the replicability of psi effects, raises an important challenge regarding the status of parapsychology as a science. This is because replication is a central tenet of the scientific method, and psi experimenter effects suggest it is only those researchers who believe that psi exists that are likely to be able to replicate positive results. According to this view, if sceptical researchers wishing to attempt replication cannot be expected to be successful due to their *a priori* beliefs about psi (no matter who they recruit in the role of experimenter), then parapsychology cannot be treated as a truly scientific discipline. However, the scientific approach adopted by psi research has so far achieved some limited success in identifying factors associated with obtaining positive results in psi experiments, and it is my view that it is such an approach that is likely to reveal more of these factors in future research. It is only when we have a much more detailed recipe for success can more consistent levels of replication be expected.

If psi experimenter effects are real, they have implications far beyond parapsychology. For example, more conventional experimental psychological research becomes difficult to interpret, as it would not be clear whether participants are the primary source of experimental findings (as is typically assumed) or whether the findings are simply an expression of the experimenter's own desires and expectations. Consciousness researchers would have to contend with the possibility that one's wishes and intentions could have a direct impact upon the wished for event; something which no currently accepted models of consciousness could accommodate. Palmer (1997) has recently argued that even parapsychologists themselves have not sufficiently considered the implications of experimenter psi, and pay insufficient attention to it when they design and conduct their experiments.

However, in the final analysis, it is left to the reader to decide whether research on the experimenter effect in parapsychology requires models of consciousness to be expanded. At the very least, it is hoped that this paper not only brings the literature surrounding this crucial issue that is central to parapsychology to a wider audience, but also encourages at least some to explore it further.

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